

Chan, Sing

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From: PLUS  
Sent: Wednesday, May 11, 2005 1:54 PM  
To: Chan, Sing  
Subject: PLUS Results for 10605602

Here are the PLUS search results for 10605602.

This search was prepared by the staff of the Scientific and Technical Information Center, SIRA. If you have questions or comments about this search, please reply via email to PLUS@uspto.gov.



10605602\_Q  
UAL.txt



10605602\_LI  
ST.txt



10605602\_W  
EST.txt



10605602\_E  
AST.txt



10605602.ea  
st



10605602\_C  
LS.txt



10605602\_C  
LSTITLES.txt



10605602\_W  
DS.txt

# STIC SEARCH HISTORY

CHAN 10/605,602

Page 1

? show files

File 6:NTIS 1964-2005/May W2  
 (c) 2005 NTIS, Intl Cpyrght All Rights Res  
 File 2:INSPEC 1969-2005/May W2  
 (c) 2005 Institution of Electrical Engineers  
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 File 347:JAPIO Nov 1976-2005/Jan(Updated 050506)  
 (c) 2005 JPO & JAPIO  
 File 350:Derwent WPIX 1963-2005/UD,UM &UP=200531  
 (c) 2005 Thomson Derwent

? ds

Set	Items	Description
S1	53377	HEATSINK? OR HEAT?(2N)SINK?
S2	5550	S1(3N) (ATTACH? OR FASTEN? OR AFFIX? OR CONNECT? OR JOIN? OR LINK? OR COUPL?)
S3	2649	S1(3N) (ADHESI? OR ADHERE? OR ADHERING? ? OR STICK? OR CLING? OR BOND? OR CEMENT? OR GLUE? OR GLUING? ? OR HOLD? OR GRIP? OR GRASP? OR BIND? OR GUM? OR CONGLUTIN? OR AGGLUTIN? OR MUCILAG? OR TACK? OR PASTE? ? OR PASTING? ?)
S4	13589	(STIFF? OR RIGID? OR INFLEX? OR UNFLEX? OR UNBEND? OR INELASTIC? OR UNELASTIC? OR NONELASTIC?) (2N) (RING? OR COLLAR? OR BAND OR BANDS OR BANDED OR BANDING? ? OR ANNULUS OR ANNULI OR LOOP? OR HOOP? OR ANNULET? OR ROUNDLET?)
S5	154	(INEXTENS? OR UNEXTENS? OR NONEXTENS? OR INDUCTIL? OR UNDUCTIL? OR NONDUCTIL?) (2N) (RING? OR COLLAR? OR BAND OR BANDS OR BANDED OR BANDING? ? OR ANNULUS OR ANNULI OR LOOP? OR HOOP? OR ANNULET? OR ROUNDLET?)
S6	135269	(CHIP OR CHIPS OR DIE OR DIES OR WAFER? OR DISK? OR DISC? ? OR SEMICOND? OR SEMI(N) (COND? ? OR CONDUCT?) OR IC OR ICS OR I(W)C OR CIRCUIT? OR VLSI? OR ELEC OR ELECTRONIC?) (2N) (PACKAG?

OR PKG? ?)

S7 2 S1 AND (S4 OR S5) AND S6

S8 1 S7 AND S3

S9 6 S1 AND (S4 OR S5)

S10 3 S9 AND S3

S11 3466869 RING? OR COLLAR? OR BAND OR BANDS OR BANDED OR BANDING? ? -  
OR ANNULUS OR ANNULI OR LOOP? OR HOOP? OR ANNULET? OR ROUNDE-  
T?

S12 2814 S1 AND S11

S13 181 S12 AND S6

S14 42 S13 AND (S2 OR S3)

S15 382403 PROTRUD? OR PROTRUS?

S16 2 S14 AND S15

S17 6 S7 OR S8 OR S9 OR S10 OR S16

S18 40 S14 NOT S17

S19 5 RD S17 (unique items)

S20 39 RD S18 (unique items)

? t s19/7,de/1

19/7,DE/1 (Item 1 from file: 104)  
DIALOG(R)File 104:AeroBase  
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0000630966

TITLE: Thermal Strap Increases Cryocooling Efficiency

AUTHORS:

Ross, Ronald G. Jr.,  
Johnson, Dean L.,  
Green, Kenneth E.,  
PUBLICATION DATE: Nov 1, 1995

LANGUAGE: English

ORIG REPORT NO: NPO-19395  
IP ACCESS NO: 95B10612  
IP DOCUMENT ID: 19950070433

AVAILABILITY INFORMATION:

FORMAT/PRICE CODE: No Digital Version Available - Order This Document,

ABSTRACT:

Report discusses concept for decreasing compressor power consumed by spacecraft mechanical cryocooler providing 0.5 W of refrigeration at temperature of 61 K at tip of cold finger. Involves connecting thermal

## 10605602\_CLSTITLES

Titles of Most Frequently Occurring Classifications of Patents Returned  
From A Search of 10605602 on May 11, 2005

- 12 257/706 (1 OR, 11 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/688 .With large area flexible electrodes in press  
chip contact with opposite sides of active semiconductor  
and surrounded by an insulating element, e.g., ring  
257/701 .Insulating material  
257/706 ..With heat sink
- 12 257/712 (7 OR, 5 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/688 .With large area flexible electrodes in press  
contact with opposite sides of active semiconductor chip  
and surrounded by an insulating element, e.g., ring  
257/712 .With provision for cooling the housing or its  
contents
- 11 361/704 (6 OR, 5 XR)  
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES  
361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE  
ELECTRICAL COMPONENTS  
361/679 .For electronic systems and devices  
361/688 ..With cooling means  
361/704 ...Thermal conduction
- 10 257/E23.092 (0 OR, 10 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E23.079 ..For integrated circuit devices, e.g., power  
bus, number of leads (EPO)  
257/E23.08 .Arrangements for cooling, heating, ventilating  
or temperature compensation; temperature-sensing  
arrangements (EPO)  
257/E23.087 ..Fillings or auxiliary members in containers  
or encapsulations selected or arranged to facilitate  
heating or cooling (EPO)  
257/E23.09 ...Auxiliary members in containers  
characterized by their shape, e.g., pistons (EPO)  
257/E23.092 ....Auxiliary members in encapsulations (EPO)
- 9 257/778 (1 OR, 8 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/734 COMBINED WITH ELECTRICAL CONTACT OR LEAD  
257/778 .Flip chip
- 8 257/717 (1 OR, 7 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/688 .With large area flexible electrodes in press  
chip contact with opposite sides of active semiconductor  
and surrounded by an insulating element, e.g., ring  
257/712 .With provision for cooling the housing or its  
contents  
257/717 ..Isolation of cooling means (e.g., heat sink)  
by an electrically insulating element (e.g., spacer)
- 6 165/185 (0 OR, 6 XR)  
Class 165 : HEAT EXCHANGE

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165/185

HEAT TRANSMITTER

- 6 257/707 (0 OR, 6 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/688 .With large area flexible electrodes in press  
 contact with opposite sides of active semiconductor  
 chip  
 and surrounded by an insulating element, e.g., ring  
 257/701 .Insulating material  
 257/706 ..With heat sink  
 257/707 ...Directly attached to semiconductor device
- 6 257/E23.101 (0 OR, 6 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/E23.079 ..For integrated circuit devices, e.g., power  
 bus, number of leads (EPO)  
 257/E23.08 .Arrangements for cooling, heating, ventilating  
 or temperature compensation; temperature-sensing  
 arrangements (EPO)  
 257/E23.101 ..Selection of materials, or shaping, to  
 facilitate cooling or heating, e.g., heat sinks (EPO)
- 5 165/80.3 (0 OR, 5 XR)  
 Class 165 : HEAT EXCHANGE  
 165/80.1 WITH RETAINER FOR REMOVABLE ARTICLE  
 165/80.2 .Electrical component  
 165/80.3 ..Air cooled, including fins
- 5 174/16.3 (0 OR, 5 XR)  
 Class 174 : ELECTRICITY: CONDUCTORS AND INSULATORS  
 174/8 WITH FLUIDS OR VACUUM  
 174/15.1 .With cooling or fluid feeding, circulating or  
 distributing  
 174/16.1 ..By ventilation or gas circulation  
 174/16.3 ...With heat sink
- 5 257/713 (0 OR, 5 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/688 .With large area flexible electrodes in press  
 contact with opposite sides of active semiconductor  
 chip  
 and surrounded by an insulating element, e.g., ring  
 257/712 .With provision for cooling the housing or its  
 contents  
 257/713 ..For integrated circuit
- 5 257/718 (0 OR, 5 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/688 .With large area flexible electrodes in press  
 contact with opposite sides of active semiconductor  
 chip  
 and surrounded by an insulating element, e.g., ring  
 257/712 .With provision for cooling the housing or its  
 contents  
 257/718 ..Heat dissipating element held in place by  
 clamping or spring means
- 5 257/720 (0 OR, 5 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/688 .With large area flexible electrodes in press  
 contact with opposite sides of active semiconductor  
 chip  
 and surrounded by an insulating element, e.g., ring

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257/712 .With provision for cooling the housing or its contents

257/720 ..Heat dissipating element has high thermal conductivity insert (e.g., copper slug in aluminum heat sink)

5 257/E23.055 (0 OR, 5 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)  
257/E23.01 .Arrangements for conducting electric current to or from solid-state body in operation, e.g., leads, terminal arrangements (EPO)  
257/E23.023 ..Consisting of soldered or bonded constructions (EPO)  
257/E23.031 ...Lead frames or other flat leads (EPO)  
257/E23.055 ....Consisting of thin flexible metallic tape with or without film carrier (EPO)

5 257/E23.069 (0 OR, 5 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)  
257/E23.01 .Arrangements for conducting electric current to or from solid-state body in operation, e.g., leads, terminal arrangements (EPO)  
257/E23.023 ..Consisting of soldered or bonded constructions (EPO)  
257/E23.06 ...Leads, i.e., metallizations or lead frames on insulating substrates, e.g., chip carriers (EPO)  
257/E23.068 ....Additional leads joined to metallizations on insulating substrate, e.g., pins, bumps, wires, flat leads (EPO)  
257/E23.069 .....Spherical bumps on substrate for external connection, e.g., ball grid arrays (BGA) (EPO)

5 361/719 (3 OR, 2 XR)  
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES  
361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE ELECTRICAL COMPONENTS  
361/679 .For electronic systems and devices  
361/688 ..With cooling means  
361/704 ...Thermal conduction  
361/717 ....For active solid state devices  
361/718 .....For integrated circuit  
361/719 .....Circuit board mounted

4 257/704 (2 OR, 2 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/688 .With large area flexible electrodes in press contact with opposite sides of active semiconductor chip  
257/701 and surrounded by an insulating element, e.g., ring  
257/704 ..Insulating material  
257/704 ..Cap or lid

4 257/719 (0 OR, 4 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/688 .With large area flexible electrodes in press contact with opposite sides of active semiconductor chip



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257/712 .and surrounded by an insulating element, e.g., ring  
 257/718 .with provision for cooling the housing or its  
 257/719 contents  
 257/718 ..Heat dissipating element held in place by  
 257/719 clamping or spring means  
 257/719 ...Pressed against semiconductor element

4 257/737 (0 OR, 4 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/734 COMBINED WITH ELECTRICAL CONTACT OR LEAD  
 257/737 .Bump leads

4 257/787 (1 OR, 3 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/787 ENCAPSULATED

4 257/796 (1 OR, 3 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/787 ENCAPSULATED  
 257/796 .With heat sink embedded in encapsulant

4 257/E23.086 (0 OR, 4 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/E23.079 ..For integrated circuit devices, e.g., power  
 257/E23.08 bus, number of leads (EPO)  
 257/E23.08 .Arrangements for cooling, heating, ventilating  
 or temperature compensation; temperature-sensing  
 arrangements (EPO)  
 257/E23.083 ..Mountings or securing means for detachable  
 cooling or heating arrangements; fixed by friction,  
 plugs  
 or springs (EPO)  
 257/E23.086 ...Snap-on arrangements, e.g., clips (EPO)

4 257/E23.104 (0 OR, 4 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/E23.079 ..For integrated circuit devices, e.g., power  
 257/E23.08 bus, number of leads (EPO)  
 257/E23.08 .Arrangements for cooling, heating, ventilating  
 or temperature compensation; temperature-sensing  
 arrangements (EPO)  
 257/E23.101 ..selection of materials, or shaping, to  
 facilitate cooling or heating, e.g., heat sinks (EPO)  
 257/E23.102 ...Cooling facilitated by shape of device (EPO)  
 257/E23.104 ....Characterized by shape of housing (EPO)

4 257/E23.106 (0 OR, 4 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/E23.079 ..For integrated circuit devices, e.g., power  
 257/E23.08 bus, number of leads (EPO)  
 257/E23.08 .Arrangements for cooling, heating, ventilating  
 or temperature compensation; temperature-sensing  
 arrangements (EPO)  
 257/E23.101 ..Selection of materials, or shaping, to  
 facilitate cooling or heating, e.g., heat sinks (EPO)  
 257/E23.106 ...Laminates or multilayers, e.g., direct bond  
 copper ceramic substrates (EPO)

4 257/E23.135 (0 OR, 4 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/E23.113 ....Ceramic materials or glass (EPO)  
 257/E23.135 .Fillings or auxiliary members in containers or

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encapsulations, e.g., centering rings (EPO)

- 4 361/707 (0 OR, 4 XR)  
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES
- 361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE  
ELECTRICAL COMPONENTS
- 361/679 .For electronic systems and devices
- 361/688 ..With cooling means
- 361/704 ...Thermal conduction
- 361/707 ....Through support means
- 4 438/121 (1 OR, 3 XR)  
Class 438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
- 438/106 PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING,  
ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR
- 438/121 .Metallic housing or support
- 4 438/123 (1 OR, 3 XR)  
Class 438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
- 438/106 PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING,  
ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR
- 438/121 .Metallic housing or support
- 438/123 ..Lead frame
- 3 174/52.4 (2 OR, 1 XR)  
Class 174 : ELECTRICITY: CONDUCTORS AND INSULATORS
- 174/50 BOXES AND HOUSINGS
- 174/52.1 .With electric device or mounting means  
therefor
- 174/52.3 ..Sealed
- 174/52.4 ...Flat housing for electronic device (e.g.,  
flat pack, dual-in-line package)
- 3 257/668 (0 OR, 3 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES
- 257/666 LEAD FRAME
- 257/668 .On insulating carrier other than a printed  
circuit board
- 3 257/675 (2 OR, 1 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES
- 257/666 LEAD FRAME
- 257/675 .With heat sink means
- 3 257/714 (0 OR, 3 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES
- 257/688 .With large area flexible electrodes in press  
contact with opposite sides of active semiconductor  
chip
- 257/712 and surrounded by an insulating element, e.g., ring  
.With provision for cooling the housing or its  
contents
- 257/714 ..Liquid coolant
- 3 257/723 (0 OR, 3 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES
- 257/688 .With large area flexible electrodes in press  
contact with opposite sides of active semiconductor chip  
and surrounded by an insulating element, e.g., ring
- 257/723 .For plural devices



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- 3 257/727 (1 OR, 2 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/688 .With large area flexible electrodes in press  
contact with opposite sides of active semiconductor chip  
and surrounded by an insulating element, e.g., ring  
257/727 .Device held in place by clamping
- 3 257/E21.504 (0 OR, 3 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E21.001 PROCESSES OR APPARATUS ADAPTED FOR MANUFACTURE  
OR TREATMENT OF SEMICONDUCTOR OR SOLID-STATE DEVICES  
OR OF PARTS THEREOF (EPO)  
257/E21.002 .Manufacture or treatment of semiconductor  
device (EPO)  
257/E21.04 ..Device having at least one potential-jump  
barrier or surface barrier, e.g., PN junction,  
depletion layer, carrier concentration layer (EPO)  
257/E21.499 ...Assembling semiconductor devices, e.g.,  
treatment packaging, including mounting, encapsulating, or  
of packaged semiconductor (EPO)  
257/E21.502 ....Encapsulation, e.g., encapsulation layer,  
coating (EPO)  
257/E21.504 .....Moulds (EPO)
- 3 257/E23.043 (0 OR, 3 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR  
SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)  
257/E23.01 .Arrangements for conducting electric current  
to or from solid-state body in operation, e.g., leads,  
terminal arrangements (EPO)  
257/E23.023 ..Consisting of soldered or bonded  
constructions (EPO)  
257/E23.031 ...Lead frames or other flat leads (EPO)  
257/E23.043 ....Geometry of lead frame (EPO)
- 3 257/E23.124 (0 OR, 3 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E23.113 ....Ceramic materials or glass (EPO)  
257/E23.116 .Encapsulations, e.g., encapsulating layers,  
coatings, e.g., for protection (EPO)  
257/E23.123 ..Characterized by arrangement or shape (EPO)  
257/E23.124 ...Device being completely enclosed (EPO)
- 3 257/E23.14 (0 OR, 3 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E23.113 ....Ceramic materials or glass (EPO)  
257/E23.135 .Fillings or auxiliary members in containers or  
encapsulations, e.g., centering rings (EPO)  
257/E23.136 ..Fillings characterized by material, its  
physical or chemical properties, or its arrangement  
within complete device (EPO)  
257/E23.14 ...Solid or gel at normal operating temperature  
of device (EPO)
- 3 257/E23.181 (0 OR, 3 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES

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- 257/E23.176 ...For flat cards, e.g., credit cards (EPO)  
 257/E23.18 .Containers; seals (EPO)  
 257/E23.181 ..Characterized by shape of container or parts,  
 e.g., caps, walls (EPO)
- 3 257/E23.193 (0 OR, 3 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/E23.176 ...For flat cards, e.g., credit cards (EPO)  
 257/E23.18 .Containers; seals (EPO)  
 257/E23.193 ..Characterized by material or arrangement of  
 seals between parts, e.g., between cap and base of  
 container or between leads and walls of container (EPO)
- 3 361/717 (2 OR, 1 XR)  
 Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES  
 361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE  
 ELECTRICAL COMPONENTS  
 361/679 .For electronic systems and devices  
 361/688 ..With cooling means  
 361/704 ...Thermal conduction  
 361/717 ....For active solid state devices
- 3 439/487 (0 OR, 3 XR)  
 Class 439 : ELECTRICAL CONNECTORS  
 439/485 WITH PROVISION TO DISSIPATE, REMOVE, OR BLOCK  
 THE FLOW OF HEAT  
 439/487 .Distinct heat sink
- 2 165/80.2 (0 OR, 2 XR)  
 Class 165 : HEAT EXCHANGE  
 165/80.1 WITH RETAINER FOR REMOVABLE ARTICLE  
 165/80.2 .Electrical component
- 2 165/80.4 (0 OR, 2 XR)  
 Class 165 : HEAT EXCHANGE  
 165/80.1 WITH RETAINER FOR REMOVABLE ARTICLE  
 165/80.2 .Electrical component  
 165/80.4 ..Liquid cooled
- 2 174/15.2 (0 OR, 2 XR)  
 Class 174 : ELECTRICITY: CONDUCTORS AND INSULATORS  
 174/8 WITH FLUIDS OR VACUUM  
 174/15.1 .With cooling or fluid feeding, circulating or  
 distributing  
 174/15.2 ..By heat pipe
- 2 174/16.1 (0 OR, 2 XR)  
 Class 174 : ELECTRICITY: CONDUCTORS AND INSULATORS  
 174/8 WITH FLUIDS OR VACUUM  
 174/15.1 .With cooling or fluid feeding, circulating or  
 distributing  
 174/16.1 ..By ventilation or gas circulation
- 2 257/673 (0 OR, 2 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/666 LEAD FRAME  
 257/673 .With bumps on ends of lead fingers to connect  
 to semiconductor
- 2 257/676 (0 OR, 2 XR)  
 Class 257 : ACTIVE SOLID-STATE DEVICES  
 257/666 LEAD FRAME

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- 257/676 .With structure for mounting semiconductor chip  
to lead frame (e.g., configuration of die bonding flag,  
absence of a die bonding flag, recess for LED)
- 2 257/686 (2 OR, 0 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/678 HOUSING OR PACKAGE  
257/685 .Multiple housings  
257/686 ..Stacked arrangement
- 2 257/693 (1 OR, 1 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/688 .With large area flexible electrodes in press  
contact with opposite sides of active semiconductor  
chip  
and surrounded by an insulating element, e.g., ring  
257/690 .With contact or lead  
257/692 ..With particular lead geometry  
257/693 ...External connection to housing
- 2 257/722 (1 OR, 1 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/688 .With large area flexible electrodes in press  
contact with opposite sides of active semiconductor  
chip  
and surrounded by an insulating element, e.g., ring  
257/712 .With provision for cooling the housing or its  
contents  
257/721 ..With gas coolant  
257/722 ...With fins
- 2 257/726 (0 OR, 2 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/688 .With large area flexible electrodes in press  
contact with opposite sides of active semiconductor  
chip  
and surrounded by an insulating element, e.g., ring  
257/723 .For plural devices  
257/725 ..With electrical isolation means  
257/726 ...Devices held in place by clamping
- 2 257/738 (0 OR, 2 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/734 COMBINED WITH ELECTRICAL CONTACT OR LEAD  
257/737 .Bump leads  
257/738 ..Ball shaped
- 2 257/780 (0 OR, 2 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/734 COMBINED WITH ELECTRICAL CONTACT OR LEAD  
257/780 .Ball or nail head type contact, lead, or bond
- 2 257/E21.503 (0 OR, 2 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E21.001 PROCESSES OR APPARATUS ADAPTED FOR MANUFACTURE  
OR TREATMENT OF SEMICONDUCTOR OR SOLID-STATE DEVICES  
OR OF  
PARTS THEREOF (EPO)  
257/E21.002 .Manufacture or treatment of semiconductor  
device (EPO)  
257/E21.04 ..Device having at least one potential-jump  
barrier or surface barrier, e.g., PN junction,

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depletion

257/E21.499 layer, carrier concentration layer (EPO)  
...Assembling semiconductor devices, e.g.,  
packaging, including mounting, encapsulating, or

treatment

257/E21.502 of packaged semiconductor (EPO)  
....Encapsulation, e.g., encapsulation layer,  
coating (EPO)  
257/E21.503 .....Encapsulation of active face of flip chip  
device, e.g., under filling or under encapsulation of  
flip-chip, encapsulation perform on chip or mounting  
substrate (EPO)

2 257/E23.004 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR  
SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)  
257/E23.003 .Mountings, e.g., nondetachable insulating  
substrates (EPO)  
257/E23.004 ..Characterized by shape (EPO)

2 257/E23.017 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR  
SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)  
257/E23.01 .Arrangements for conducting electric current  
to or from solid-state body in operation, e.g., leads,  
terminal arrangements (EPO)  
257/E23.012 ..Consisting of lead-in layers inseparably  
applied to semiconductor body (EPO)  
257/E23.017 ...Materials (EPO)

2 257/E23.054 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR  
SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)  
257/E23.01 .Arrangements for conducting electric current  
to or from solid-state body in operation, e.g.,

leads,

terminal arrangements (EPO)  
257/E23.023 ..Consisting of soldered or bonded  
constructions (EPO)  
257/E23.031 ...Lead frames or other flat leads (EPO)  
257/E23.053 ....Characterized by materials of lead frames  
or layers thereon (EPO)  
257/E23.054 .....Metallic layers on lead frames (EPO)

2 257/E23.065 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR  
SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)  
257/E23.01 .Arrangements for conducting electric current  
to or from solid-state body in operation, e.g., leads,  
terminal arrangements (EPO)  
257/E23.023 ..Consisting of soldered or bonded  
constructions (EPO)  
257/E23.06 ...Leads, i.e., metallizations or lead frames  
on insulating substrates, e.g., chip carriers (EPO)  
257/E23.065 ....Flexible insulating substrates (EPO)

2 257/E23.067 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES  
257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR

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## SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)

- 257/E23.01 .Arrangements for conducting electric current to or from solid-state body in operation, e.g., leads, terminal arrangements (EPO)
- 257/E23.023 ..Consisting of soldered or bonded constructions (EPO)
- 257/E23.06 ...Leads, i.e., metallizations or lead frames on insulating substrates, e.g., chip carriers (EPO)
- 257/E23.067 ....Via connections through substrates, e.g., pins going through substrate, coaxial cables (EPO)

## 2 257/E23.08 (0 OR, 2 XR)

## Class 257 : ACTIVE SOLID-STATE DEVICES

- 257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
- 257/E23.08 .Arrangements for cooling, heating, ventilating or temperature compensation; temperature-sensing arrangements (EPO)

## 2 257/E23.084 (0 OR, 2 XR)

## Class 257 : ACTIVE SOLID-STATE DEVICES

- 257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
- 257/E23.08 .Arrangements for cooling, heating, ventilating or temperature compensation; temperature-sensing arrangements (EPO)
- 257/E23.083 ..Mountings or securing means for detachable cooling or heating arrangements; fixed by friction, or springs (EPO)
- 257/E23.084 ...With bolts or screws (EPO)

plugs

## 2 257/E23.102 (0 OR, 2 XR)

## Class 257 : ACTIVE SOLID-STATE DEVICES

- 257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
- 257/E23.08 .Arrangements for cooling, heating, ventilating or temperature compensation; temperature-sensing arrangements (EPO)
- 257/E23.101 ..Selection of materials, or shaping, to facilitate cooling or heating, e.g., heat sinks (EPO)
- 257/E23.102 ...Cooling facilitated by shape of device (EPO)

## 2 257/E23.105 (0 OR, 2 XR)

## Class 257 : ACTIVE SOLID-STATE DEVICES

- 257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
- 257/E23.08 .Arrangements for cooling, heating, ventilating or temperature compensation; temperature-sensing arrangements (EPO)
- 257/E23.101 ..Selection of materials, or shaping, to facilitate cooling or heating, e.g., heat sinks (EPO)
- 257/E23.102 ...Cooling facilitated by shape of device (EPO)
- 257/E23.105 ....Wire-like or pin-like cooling fins or heat sinks (EPO)

## 2 257/E23.109 (0 OR, 2 XR)

## Class 257 : ACTIVE SOLID-STATE DEVICES

- 257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
- 257/E23.08 .Arrangements for cooling, heating, ventilating

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or temperature compensation; temperature-sensing  
arrangements (EPO)

257/E23.101 ..Selection of materials, or shaping, to  
facilitate cooling or heating, e.g., heat sinks (EPO)

257/E23.106 ...Laminates or multilayers, e.g., direct bond  
copper ceramic substrates (EPO)

257/E23.109 ....Metallic materials (EPO)

2 257/E23.111 (0 OR, 2 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.079 ..For integrated circuit devices, e.g., power  
bus, number of leads (EPO)

257/E23.08 .Arrangements for cooling, heating, ventilating  
or temperature compensation; temperature-sensing  
arrangements (EPO)

257/E23.101 ..Selection of materials, or shaping, to  
facilitate cooling or heating, e.g., heat sinks (EPO)

257/E23.11 ...Cooling facilitated by selection of  
materials for device (or materials for thermal expansion  
adaptation, e.g., carbon) (EPO)

257/E23.111 ....Diamond (EPO)

2 257/E23.119 (0 OR, 2 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.113 ....Ceramic materials or glass (EPO)

257/E23.116 .Encapsulations, e.g., encapsulating layers,  
coatings, e.g., for protection (EPO)

257/E23.117 ..Characterized by material, e.g., carbon (EPO)

257/E23.119 ...Organic, e.g., plastic, epoxy (EPO)

2 257/E23.189 (0 OR, 2 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.176 ...For flat cards, e.g., credit cards (EPO)

257/E23.18 .Containers; seals (EPO)

257/E23.181 ..Characterized by shape of container or parts,  
e.g., caps, walls (EPO)

257/E23.188 ...Container being hollow construction and  
having insulating or insulated base as mounting for  
semiconductor body (EPO)

257/E23.189 ....Leads being parallel to base (EPO)

2 257/E25.023 (0 OR, 2 XR)  
Class 257 : ACTIVE SOLID-STATE DEVICES

257/E25.001 ASSEMBLIES CONSISTING OF PLURALITY OF  
INDIVIDUAL SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES  
(EPO)

257/E25.002 .All devices being of same type, e.g.,  
assemblies of rectifier diodes (EPO)

257/E25.022 ..Devices having separate containers (EPO)

257/E25.023 ...Device consisting of plurality of  
semiconductor or other solid-state devices or components  
formed in or on common substrate, e.g., integrated  
circuit device (EPO)

2 361/688 (0 OR, 2 XR)  
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES

361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE  
ELECTRICAL COMPONENTS

361/679 .For electronic systems and devices



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- 361/688 ..With cooling means
- 2 361/690 (0 OR, 2 XR)  
 Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES
- 361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE  
 ELECTRICAL COMPONENTS
- 361/679 .For electronic systems and devices
- 361/688 ..With cooling means
- 361/689 ...Fluid
- 361/690 ....Air
- 2 361/695 (0 OR, 2 XR)  
 Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES
- 361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE  
 ELECTRICAL COMPONENTS
- 361/679 .For electronic systems and devices
- 361/688 ..With cooling means
- 361/689 ...Fluid
- 361/690 ....Air
- 361/694 .....With air circulating means
- 361/695 .....Fan or blower
- 2 361/700 (0 OR, 2 XR)  
 Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES
- 361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE  
 ELECTRICAL COMPONENTS
- 361/679 .For electronic systems and devices
- 361/688 ..With cooling means
- 361/689 ...Fluid
- 361/699 ....Liquid
- 361/700 .....Change of physical state
- 2 361/711 (0 OR, 2 XR)  
 Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES
- 361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE  
 ELECTRICAL COMPONENTS
- 361/679 .For electronic systems and devices
- 361/688 ..With cooling means
- 361/704 ...Thermal conduction
- 361/707 ....Through support means
- 361/709 .....Heat sink
- 361/711 .....Cooling plate or bar
- 2 361/776 (0 OR, 2 XR)  
 Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES
- 361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE  
 ELECTRICAL COMPONENTS
- 361/679 .For electronic systems and devices
- 361/748 ..Printed circuit board
- 361/760 ...Connection of components to board
- 361/772 ....With specific lead configuration
- 361/776 .....Flexible connecting lead
- 2 361/785 (0 OR, 2 XR)  
 Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES
- 361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE  
 ELECTRICAL COMPONENTS

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361/679	.For electronic systems and devices
361/748	..Printed circuit board
361/784	...Plural
361/785	....With separable connector or socket means

  

2	438/106	(1 OR, 1 XR)
	Class	438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
	438/106	PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING, ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR

  

2	438/118	(1 OR, 1 XR)
	Class	438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
	438/106	PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING, ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR
	438/118	.Including adhesive bonding step

  

2	438/122	(0 OR, 2 XR)
	Class	438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
	438/106	PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING, ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR
	438/121	.Metallic housing or support
	438/122	..Possessing thermal dissipation structure (i.e., heat sink)

  

2	438/124	(0 OR, 2 XR)
	Class	438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
	438/106	PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING, ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR
	438/121	.Metallic housing or support
	438/124	..And encapsulating

  

2	439/485	(0 OR, 2 XR)
	Class	439 : ELECTRICAL CONNECTORS
	439/485	WITH PROVISION TO DISSIPATE, REMOVE, OR BLOCK THE FLOW OF HEAT

  

2	439/73	(0 OR, 2 XR)
	Class	439 : ELECTRICAL CONNECTORS
	439/55	PREFORMED PANEL CIRCUIT ARRANGEMENT, E.G., PCB, ICM, DIP, CHIP, WAFER, ETC.
	439/65	.With provision to conduct electricity from panel circuit to another panel circuit
	439/68	..Micro panel circuit arrangement, e.g., ICM, DIP, chip, wafer, etc.
	439/70	...Dual inline package (DIP)
	439/73	....With external, contact enhancing clamp

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shorten 1  
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some 1  
space 1  
specification 1  
spot 3  
stage 3  
stages 1  
steps 1  
stiff 2  
stiffener 24  
strate 1  
strength 2  
stress 1  
structure 15  
stylesheet 2  
sub 1  
substrate 14  
summary 1  
sur 1  
surfaces 1  
surrounding 1  
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wafer 4  
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wherever 1  
which 1  
while 3  
widely 1  
will 2  
with 13  
words 2  
yield 1

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Most Frequently Occurring Classifications of Patents Returned  
From A Search of 10605602 on May 11, 2005

Original Classifications

7 257/712  
6 361/704  
3 361/719  
2 174/52.4  
2 257/675  
2 257/686  
2 257/704  
2 361/717

Cross-Reference Classifications

11 257/706  
10 257/E23.092  
8 257/778  
7 257/717  
6 165/185  
6 257/707  
6 257/E23.101  
5 165/80.3  
5 174/16.3  
5 257/712  
5 257/713  
5 257/718  
5 257/720  
5 257/E23.055  
5 257/E23.069  
5 361/704  
4 257/719  
4 257/737  
4 257/E23.086  
4 257/E23.104  
4 257/E23.106  
4 257/E23.135  
4 361/707  
3 257/668  
3 257/714  
3 257/723  
3 257/787  
3 257/796  
3 257/E21.504  
3 257/E23.043  
3 257/E23.124  
3 257/E23.14  
3 257/E23.181  
3 257/E23.193  
3 438/121  
3 438/123  
3 439/487  
2 165/80.2  
2 165/80.4  
2 174/15.2  
2 174/16.1  
2 257/673  
2 257/676  
2 257/704  
2 257/726  
2 257/727  
2 257/738  
2 257/780

2 257/E21.503  
 2 257/E23.004  
 2 257/E23.017  
 2 257/E23.054  
 2 257/E23.065  
 2 257/E23.067  
 2 257/E23.08  
 2 257/E23.084  
 2 257/E23.102  
 2 257/E23.105  
 2 257/E23.109  
 2 257/E23.111  
 2 257/E23.119  
 2 257/E23.189  
 2 257/E25.023  
 2 361/688  
 2 361/690  
 2 361/695  
 2 361/700  
 2 361/711  
 2 361/719  
 2 361/776  
 2 361/785  
 2 438/122  
 2 438/124  
 2 439/485  
 2 439/73

## Combined Classifications

12 257/706  
 12 257/712  
 11 361/704  
 10 257/E23.092  
 9 257/778  
 8 257/717  
 6 165/185  
 6 257/707  
 6 257/E23.101  
 5 165/80.3  
 5 174/16.3  
 5 257/713  
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 3 174/52.4  
 3 257/668  
 3 257/675  
 3 257/714  
 3 257/723

3 257/727  
3 257/E21.504  
3 257/E23.043  
3 257/E23.124  
3 257/E23.14  
3 257/E23.181  
3 257/E23.193  
3 361/717  
3 439/487  
2 165/80.2  
2 165/80.4  
2 174/15.2  
2 174/16.1  
2 257/673  
2 257/676  
2 257/686  
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